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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/558,266	04/25/2000	Nobuyuki Kambe	N19-.12-0033	8988

7590

10/27/2003

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EXAMINER

FERGUSON, LAWRENCE D

ART UNIT	PAPER NUMBER
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1774

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DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/558,266

Applicant(s)

KAMBE ET AL.

Examiner

Lawrence D Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 41-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,8-10,12,14-16,41-50 and 53 is/are rejected.
- 7) ☒ Claim(s) 4-7,11,13, 51 and 52 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment mailed July 9, 2003. Examiner regrets the untimely reopening of the case and withdraws the previous rejections to further prosecute the claimed invention. Claims 1 and 4-16 and 41-53 are pending in this case.

Claim Rejections – 35 USC § 103(a)

2. Claims 1, 8-10, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGuire et al. (U.S. 5,352,485).

3. DeGuire discloses an inorganic layer comprising self-assembled monolayers (column 3, lines 58-68) forming a close-packed highly ordered film (column 4, lines 1-5). DeGuire discloses the incorporation of metal oxides (abstract, column 2, lines 33-40 and column 3, lines 5-30). The reference shows linker molecules in Figures 1 and 2a-2c having two functional groups. Although DeGuire does not explicitly disclose inorganic particles, it would have been obvious to one of ordinary skill in the art to recognize DeGuire obtains inorganic particles because the reference comprises an inorganic layer. Because DeGuire comprises an inorganic layer, it is obvious to the average artisan that the layer comprises inorganic particles. Although DeGuire is silent towards a

high index of refraction, the index of refraction is directly related to the specific self assembled layer used. Because the reference uses the self assembled material comprising inorganic particles, the index of refraction would be expected to be the same as Applicant claims.

Claim Rejections – 35 USC § 103(a)

4. Claims 15-16, 41-50 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alivisatos et al. (U.S. 5,751,018).

Alivisatos discloses self-assembled bifunctional organic monolayers as bridge compounds exposed to solutions of nanocrystals that are organized into an assembly of clusters (abstract, lines 1-14). Alivisatos discloses inorganic surfaces such as metals and oxides (column 2, lines 37-39) and thin layers of metal or metal oxides (column 5, line 7). The reference further discloses inorganic surfaces (column 5 line 67 through column 6, line 1) having fluorescence (column 13, line 16) with bridging moieties having two functional groups (column 13, lines 44-46). Although DeGuire is silent towards particle diameter and photonic band gap, the particle diameter and band gap are directly related to the specific self assembled material used. Because the reference uses the same self assembled material comprising inorganic particles as claimed, the particle diameter and band gap would be expected to be the same as Applicant claims. Additionally, Alivisatos discloses particles having dimensions of less than 10nm (column 3, lines 55-60). Alivisatos does not show that no primary particles have a diameter

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greater than about a factor of four times the average primary particle size, as in instant claim 45. However, such particle diameter is a property which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the particle diameter, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. particle diameter) fails to render claims patentable in the absence of unexpected results. It would have been obvious to one of ordinary skill in the art to make the self assembled structure with the limitation of no primary particle diameter being greater than about four times the average primary particle size since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 USPQ 215 (CCPA 1980).

Response to Arguments

5. Applicant's remarks to 35 USC 112, first paragraph have been considered and overcome the rejection due to amendment of claim 1.

Applicant's arguments to 35 USC 103(a) as being unpatentable by Debe et al. (U.S. 5,879,827) are moot due to new grounds of rejection.

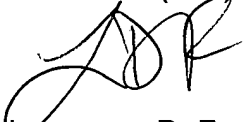
Applicant's arguments to 35 USC 102(b) as being anticipated by Alivisatos et al. (U.S. 5,751,018) are moot based on new grounds of rejection.

6. Claims 4-7, 11, 13 and 51-52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Additionally, Claim 1 will be found allowable if the limitations of claim 4 are incorporated into the primary claim.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is (703) 305-9978. The examiner can normally be reached on Monday through Friday 8:30 AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. Please allow the examiner twenty-four hours to return your call.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2351.


Lawrence D. Ferguson
Examiner
Art Unit 1774

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

